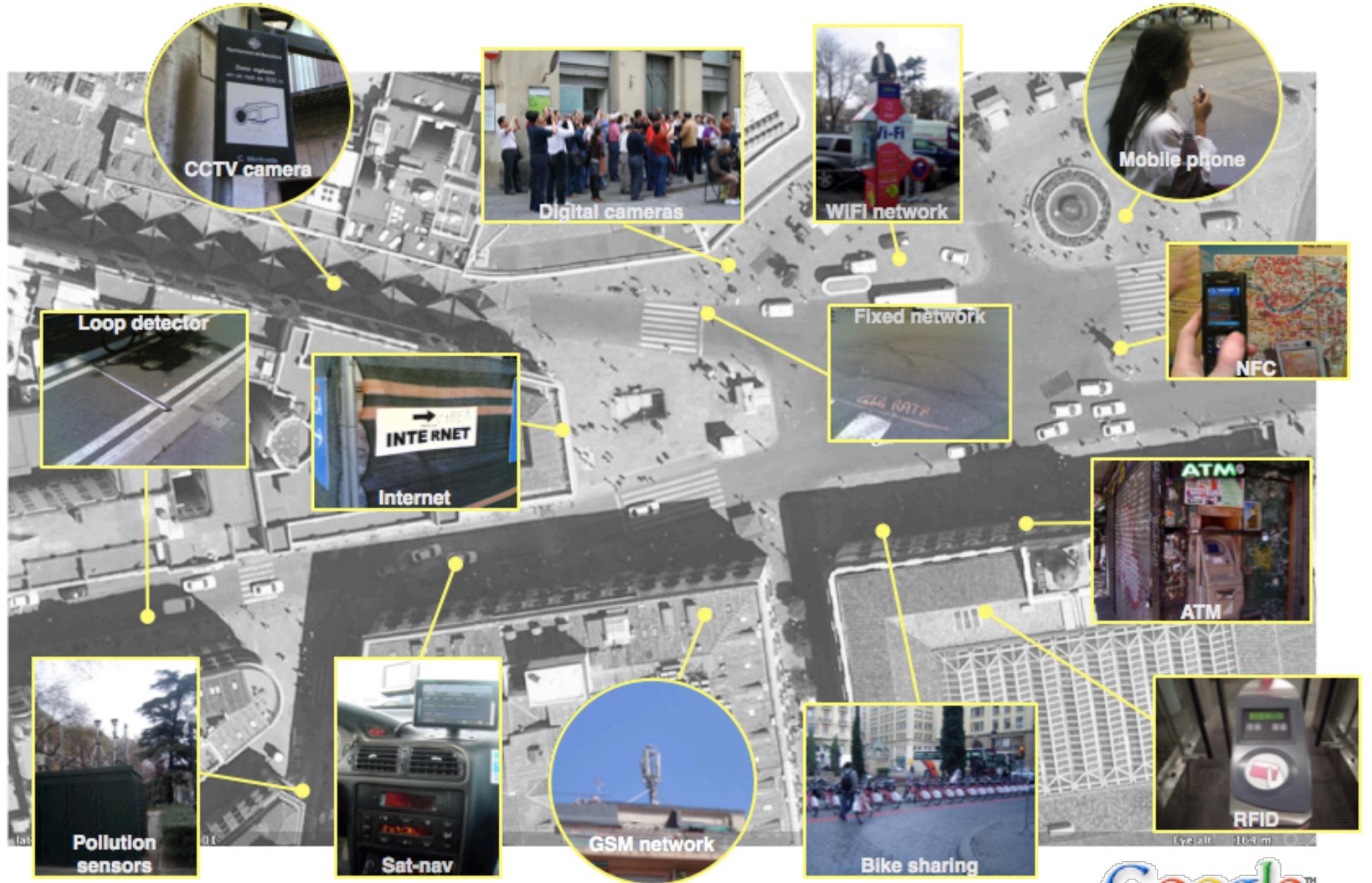




Mapes dinàmics & de les petjades digitals a la ciutat.

Fabien Girardin & Josep Blat
Universitat Pompeu Fabra

VIII Forum TIG – SIG
March 3, 2009, Barcelona, Spain



New urban actors

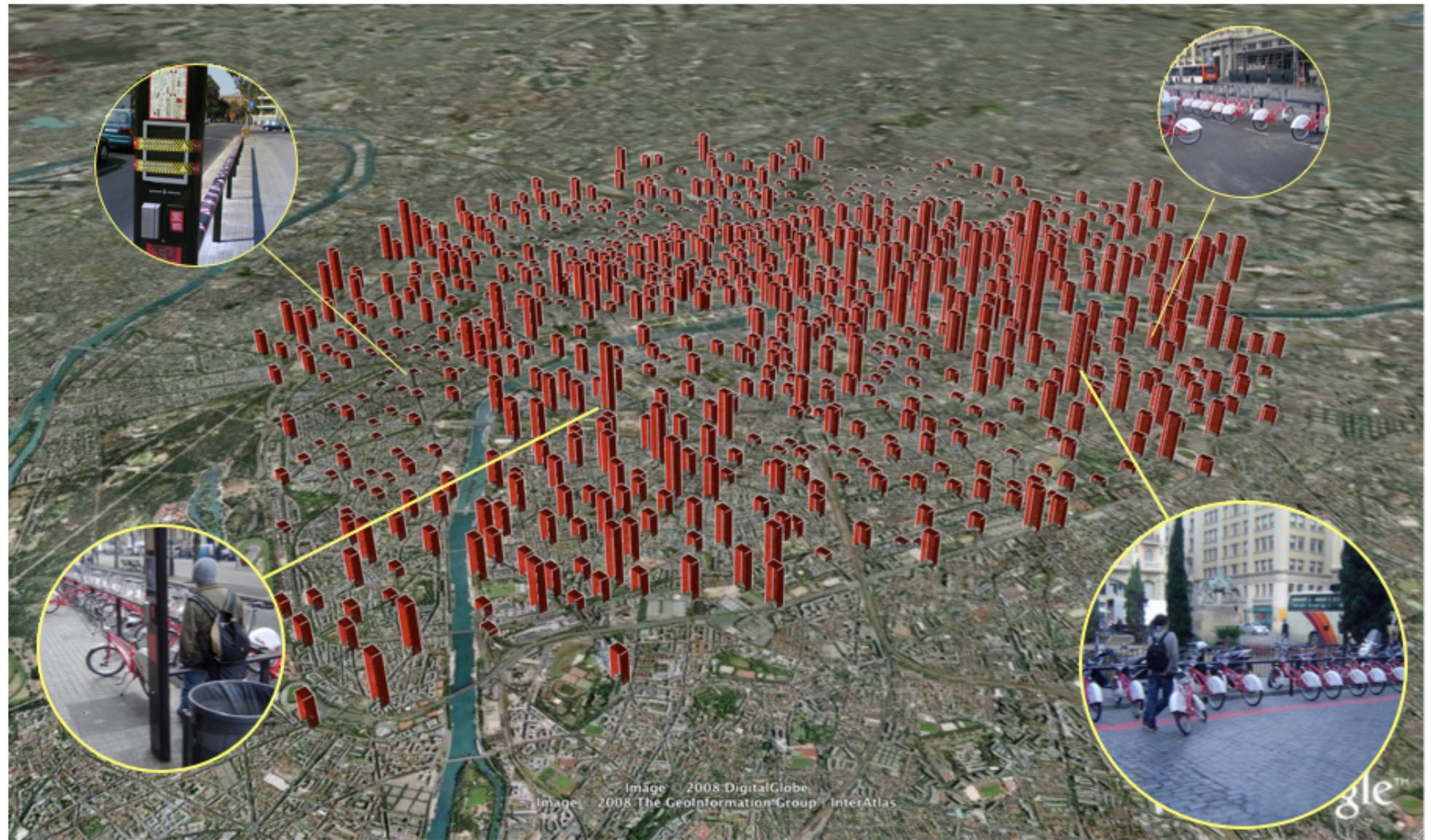


People-centric sensing

- Data produced through people's interactions with digital systems and infrastructures
- Capture a sample of human, social or environmental state (individuals act as sensors)
- Bottom-up , decentralized nature

Digital shadows

Implicit interactions



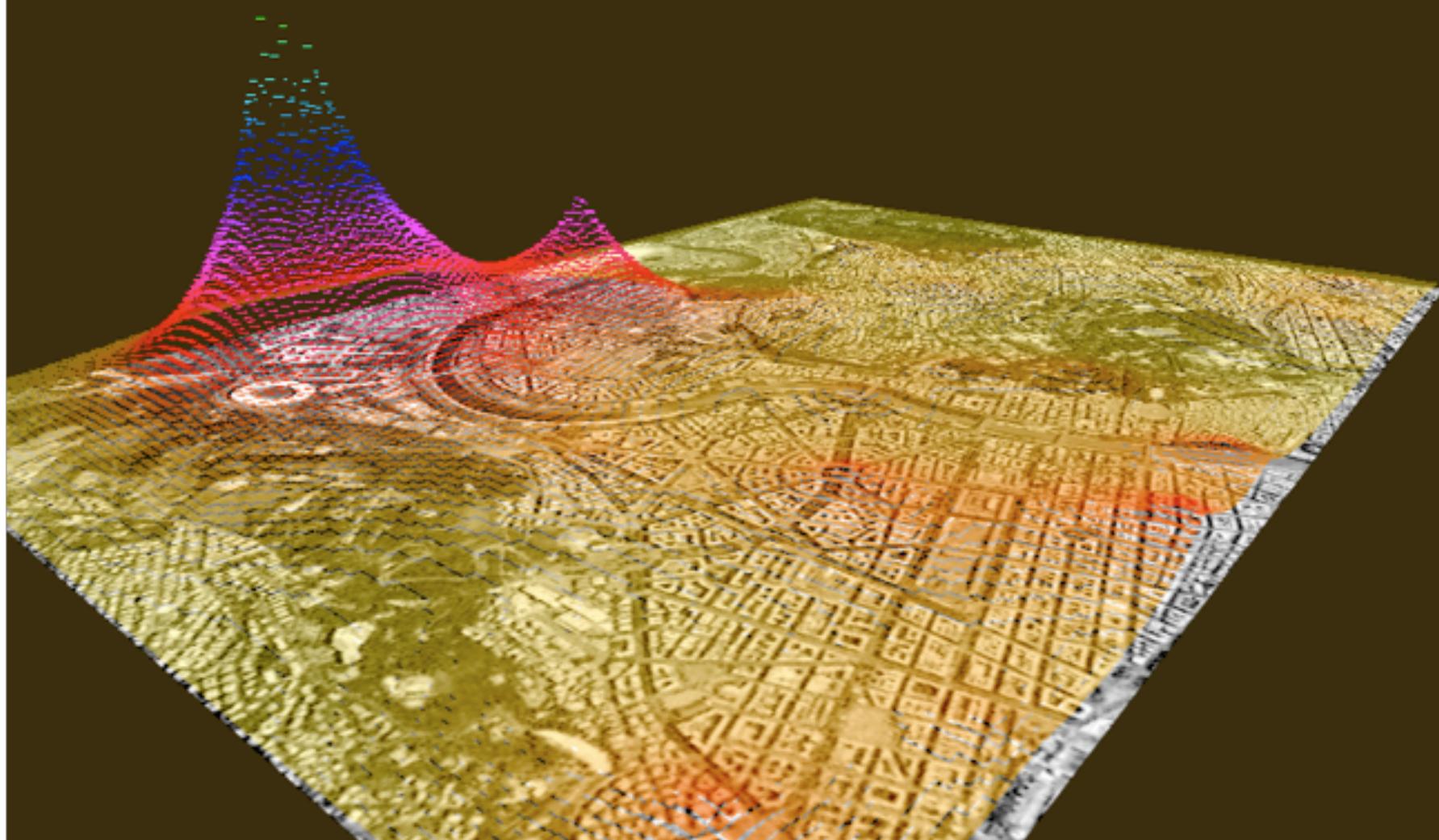
bikes as sensors

<http://www.girardin.org/fabien/tracing/velib/>

Madonna Concert
Cellphone activity in Stadio Olimpico Rome
2006-08-06

But receives rave reviews from 70,000 in attendance
At Rome's Olympic Stadium
Located about three kilometres from the Vatican
During the song Live to Tell...
Madonna appeared against a mirrored cross

night morning afternoon evening 19:00



Cellular network traffic as proxy of city dynamics

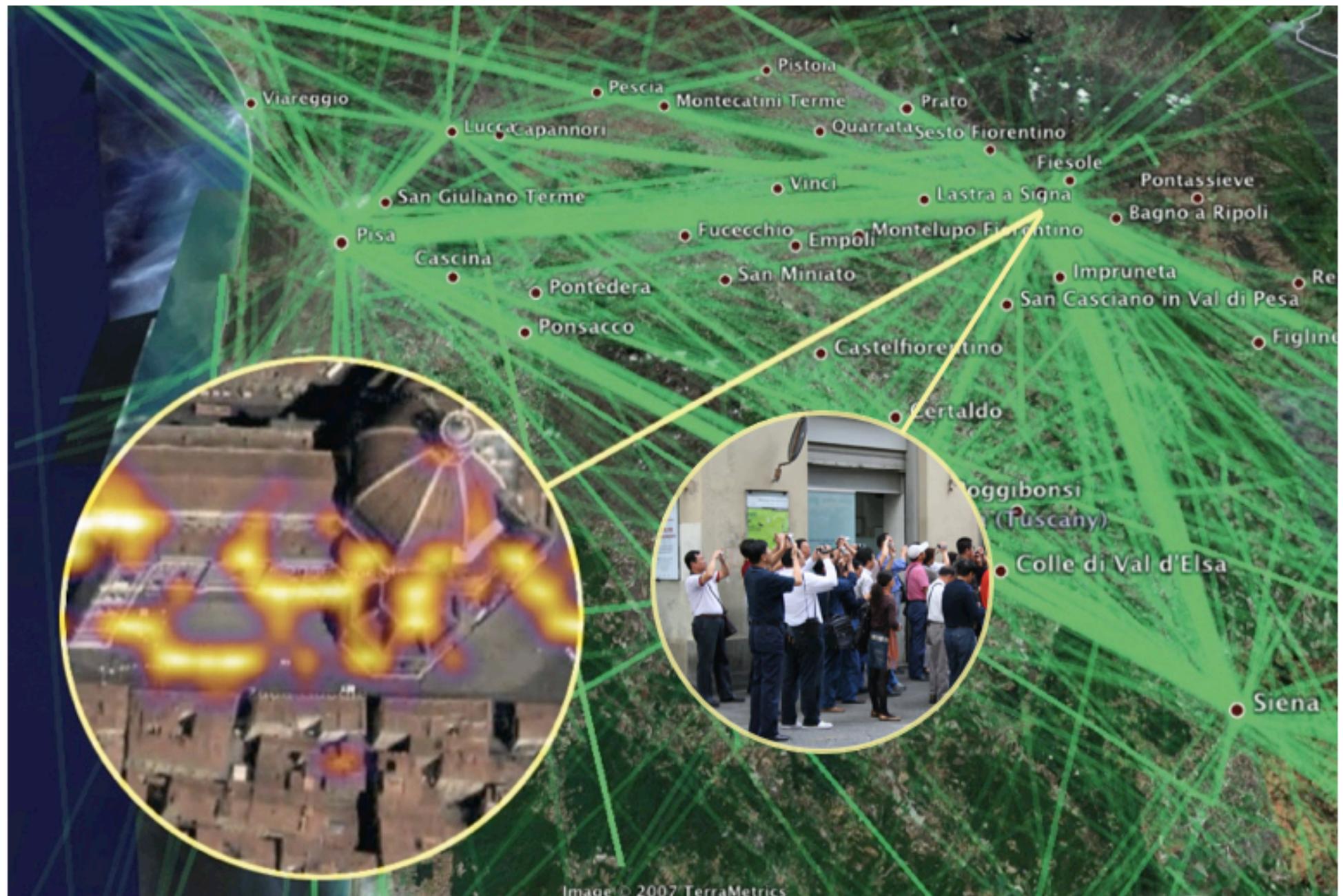
<http://senseable.mit.edu/realtimerome/>

Digital footprints

- From shoeboxes to digital footprints
- Fall of prices to store data
- Raise of online social networks and *new cartography* as ways to map and visualize the city through images and narrative descriptions

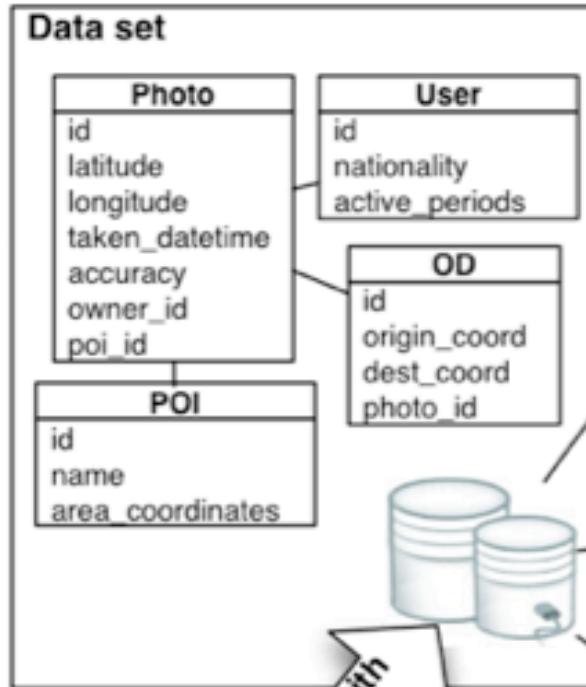
Nowadays tourists leave digital footprints behind them

<http://www.girardin.org/fabien/tracing/>

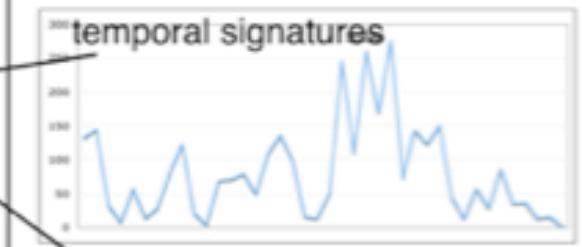
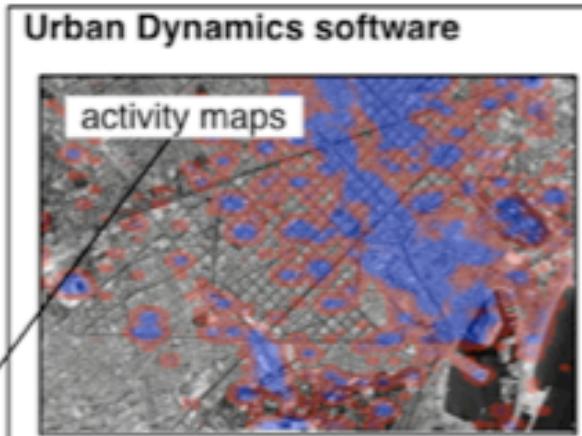




upload and geo-reference



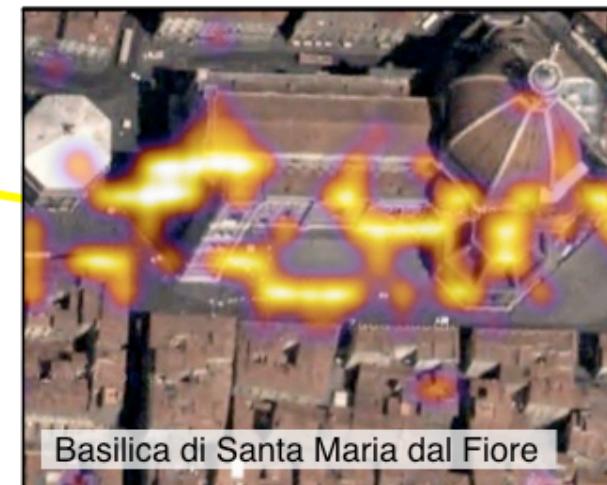
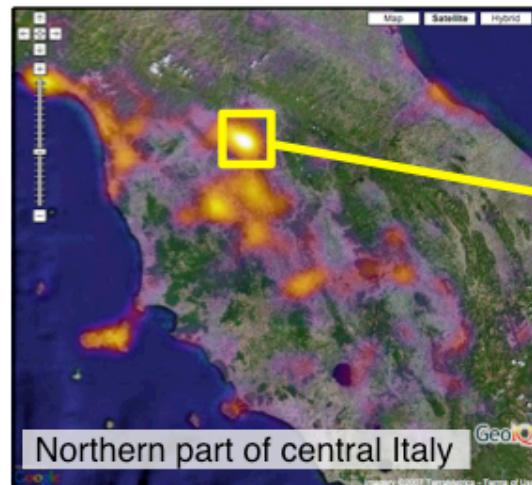
retrieve with Flickr API



2 years (2005-2007)

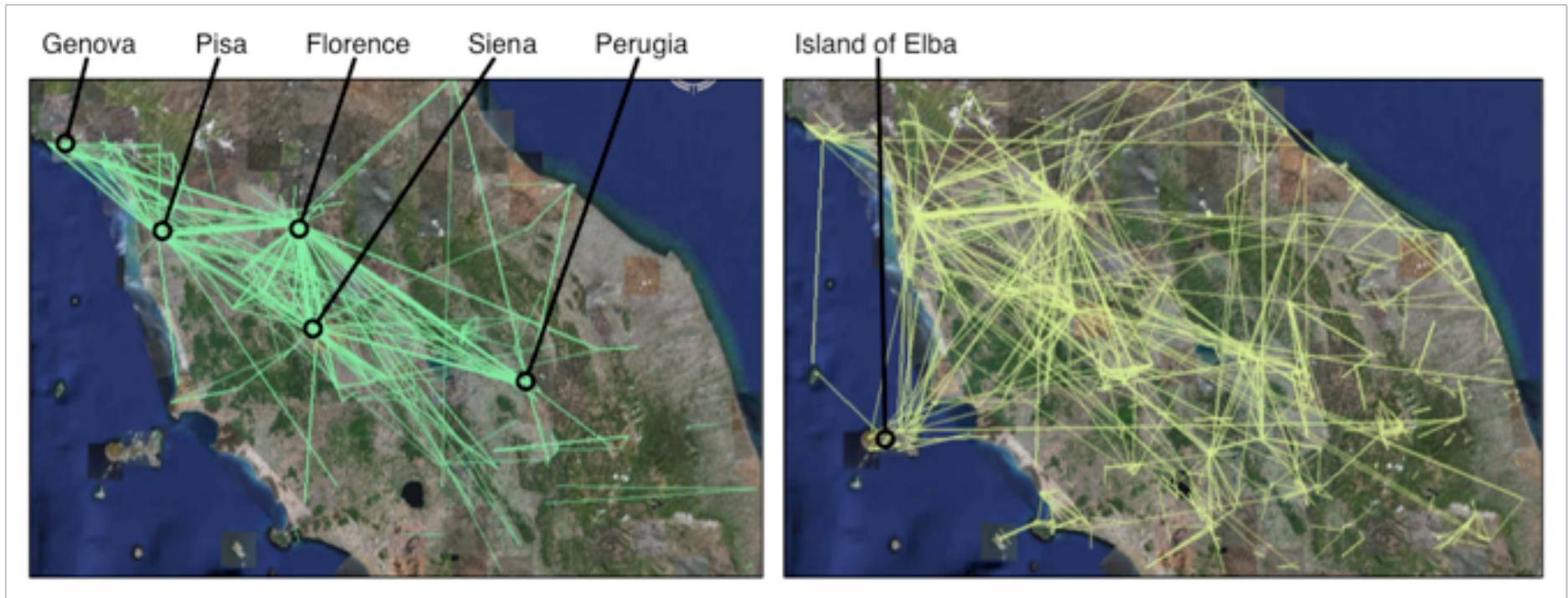
Region	Photos	Photographers
Barcelona	154,106	5818
Province of Florence	81,017	4280
Rome	144,501	6018

Density



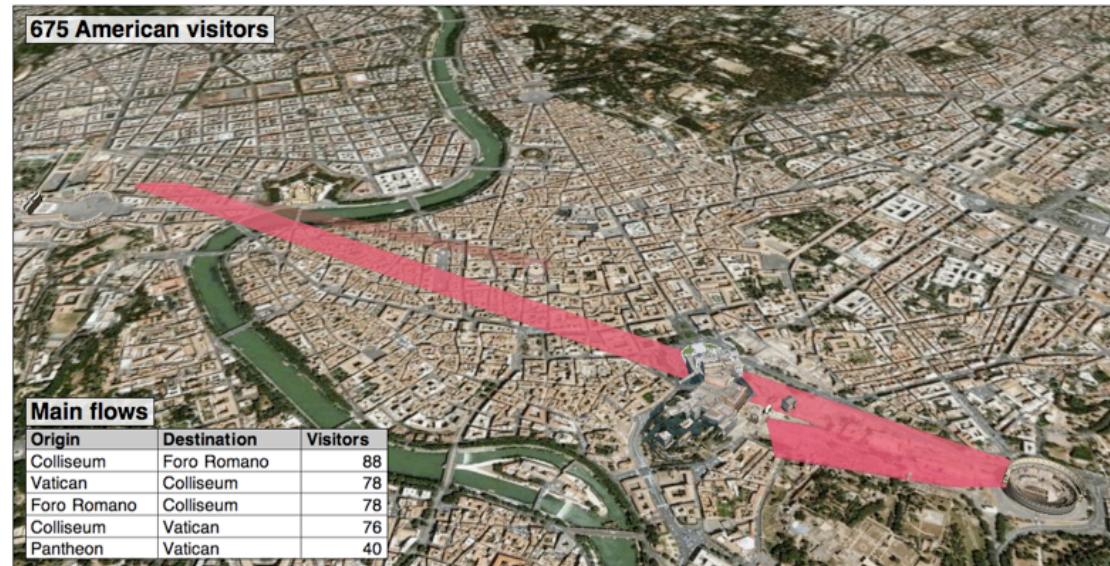
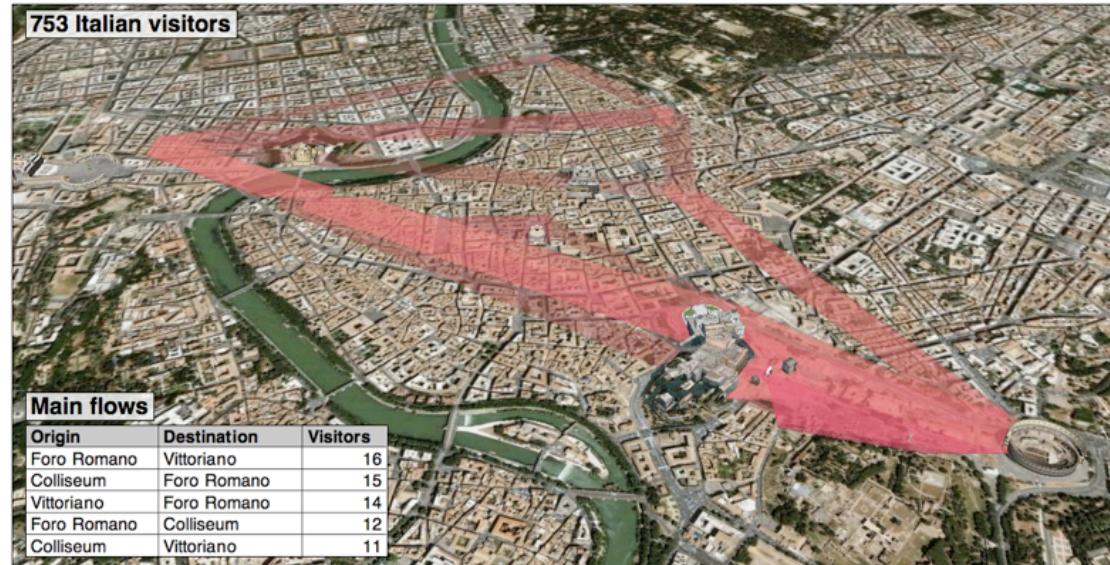
Girardin, F., Dal Fiore, F., Ratti, C., and Blat, J. (2008). Leveraging explicitly disclosed location information to understand tourist dynamics: A case study. *Journal of Location-Based Services*, 2(1):41–54.

Traces



Tourists and locals can be recognized from their practice
60% of users disclose their home country

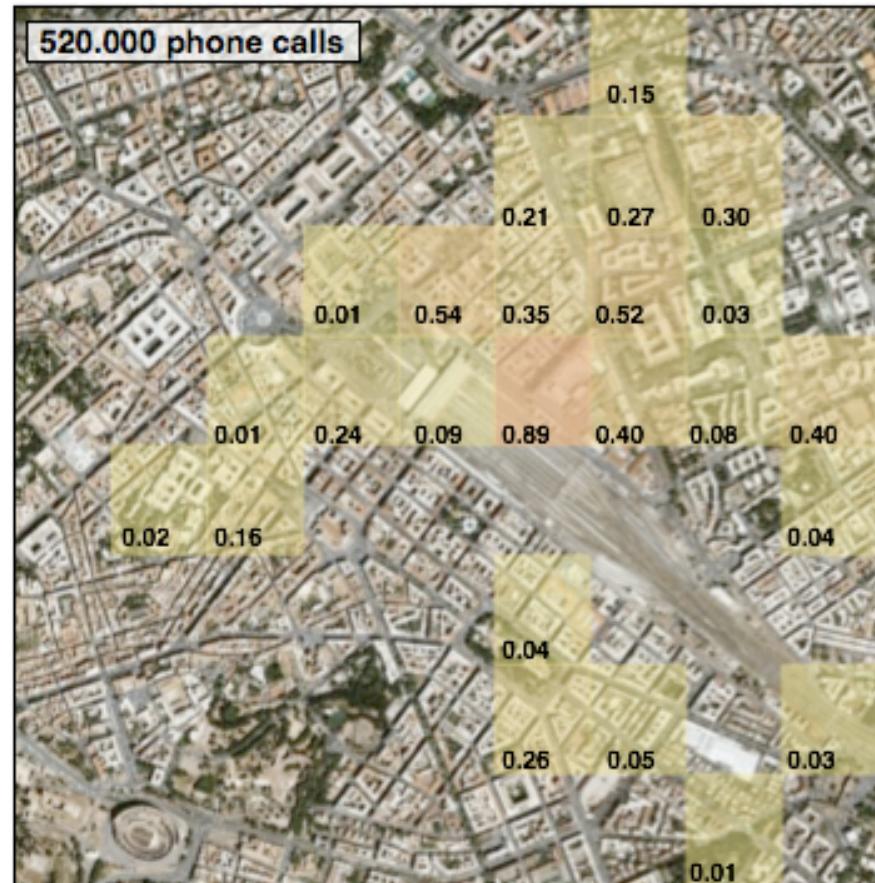
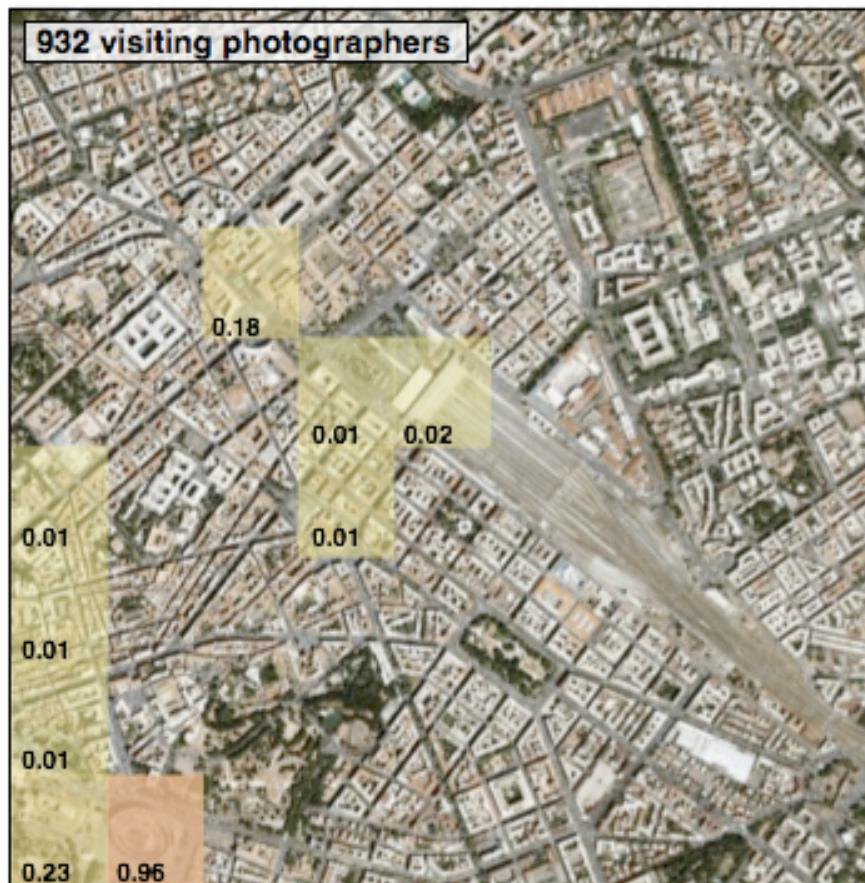
Flows





Act of communication

Space and visitor activities



Girardin, F., Calabrese, F., Fiore, F. D., Ratti, C., and Blat, J. (2008). Digital footprinting: Uncovering tourists with user-generated content. *IEEE Pervasive Computing*, 7(4):36–43.

Evolution of attractiveness



Girardin, F., Vaccari, A., Gerber, A., Biderman, A., and Ratti, C. (In submission). Quantifying urban attractiveness from the distribution and density of digital footprints. *International Journal of Spatial Data Infrastructure Research*.

Limitations

- Provide a glimpse to reality. Sense what is cheap to sense, plus lack of data interoperability.
- Reveal phenomena. But does not explain them.
- Need to prove that these data bring at least the same amount of knowledge than the traditional methods (e.g. surveys).
- Need of new skills and techniques to analyze and grasp the significance of these data

“The consequences for the social sciences will be enormous: they can finally have access to masses of data that are of the same order of magnitude as that of their older sisters, the natural sciences.” Bruno Latour

Latour, B. (2007). Beware, your imagination leaves digital traces, Times Higher Education Supplement, April 2007.



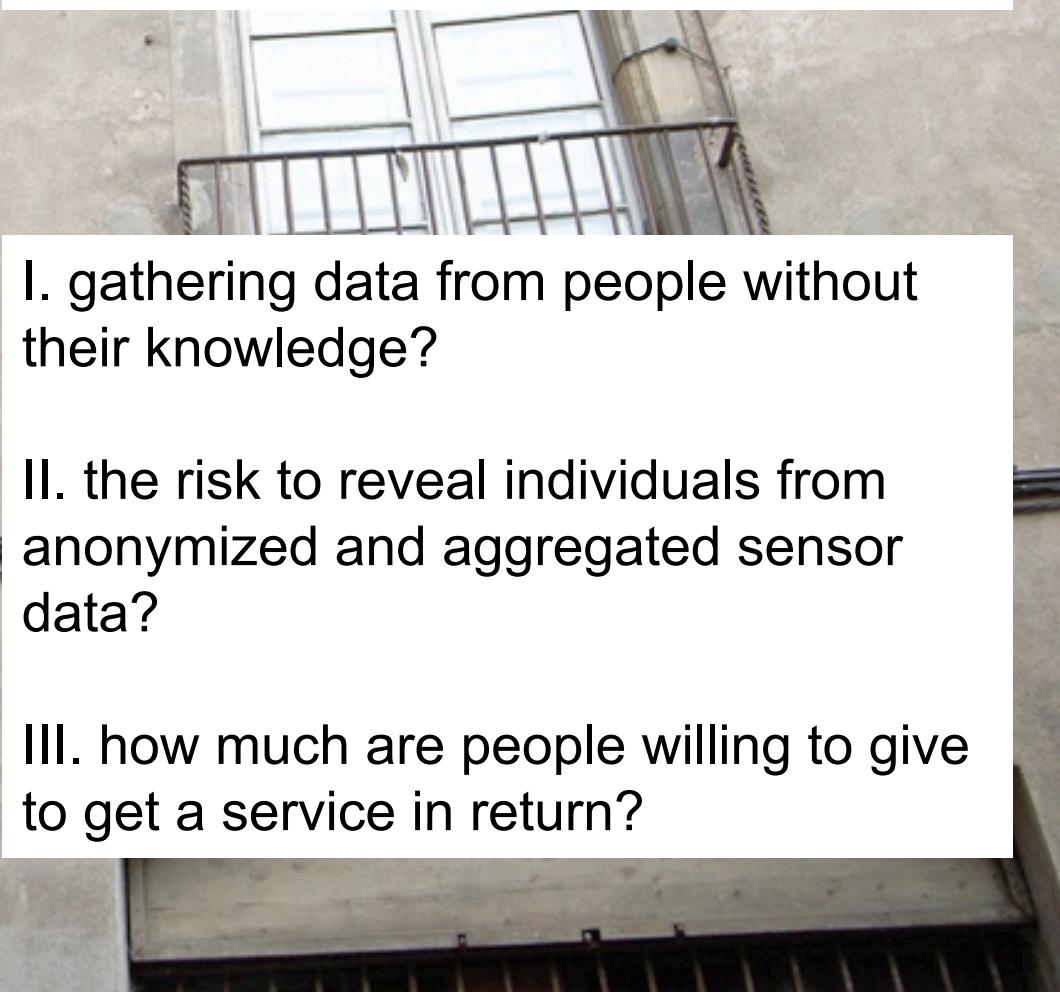
Evidence-based urbanism (planning was about predict and accommodate and it becomes more observe and improve)

Feedback loop (provide immediate information that can be acted upon)

Citizen empowerment (pervasive tools and services)



We become a “world of witnesses” with a the production of myriads of little stories – a messy infinity of ‘Little Sisters’ rather than one omniscient ‘Big Brother’



I. gathering data from people without their knowledge?

II. the risk to reveal individuals from anonymized and aggregated sensor data?

III. how much are people willing to give to get a service in return?

Thank you!

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UPF, Grup de tecnologies interactives

Research blog
<http://liftlab.com/think/fabien>

In collaboration with MIT SENSEable City Lab
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